

PROJECT 10073 RECORD CARD

1. DATE <u>28 February 1963</u>		2. LOCATION <u>Winslow, Arizona</u>		12. CONCLUSIONS <input type="checkbox"/> Was Balloon <input type="checkbox"/> Probably Balloon <input type="checkbox"/> Possibly Balloon <input type="checkbox"/> Was Aircraft <input type="checkbox"/> Probably Aircraft <input type="checkbox"/> Possibly Aircraft <input type="checkbox"/> Was Astronomical <input type="checkbox"/> Probably Astronomical <input type="checkbox"/> Possibly Astronomical <input checked="" type="checkbox"/> Other <u>CLOUD</u> <input checked="" type="checkbox"/> Insufficient Data for Evaluation <input type="checkbox"/> Unknown	
3. DATE-TIME GROUP Local <u>1730-1830</u> GMT _____		4. TYPE OF OBSERVATION <input type="checkbox"/> Ground-Visual <input type="checkbox"/> Ground-Radar <input checked="" type="checkbox"/> Air-Visual <input type="checkbox"/> Air-Intercept Radar			
5. PHOTOS <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		6. SOURCE <u>Civilian</u> <u>Military</u>			
7. LENGTH OF OBSERVATION <u>not reported</u>		8. NUMBER OF OBJECTS <u>one</u>		9. COURSE <u>not reported</u>	
10. BRIEF SUMMARY OF SIGHTING Sighting reported third hand. Object described as a ring of light at 45 dgr elevation at 60 miles distant.				11. COMMENTS Limited data presented. Attempts to obtain additional info proved negative. Obj possibly balloon or astro body. Comet Ikeya was in area at time. No direction given. Insufficient data for analysis. <u>SUBSEQUENT DATA INDICATES CLOUD OBSERVATION.</u>	

CIE FIELDS

TECHNOLOGY

Tiny Circuits Cut and Welded by Electron Beam

► A NEW ELECTRON beam machine cuts, drills and welds circuits so minute that they fit on wafers no thicker than a fingernail.

The electron cutter-welder works like a gun, shooting electrons on a surface with a power of 10 billion watts per square inch. Highly accurate, the machine which works on all metallic materials and glass can be aimed to a spot less than five ten-thousandths of an inch. The operator views progress through binocular lenses which magnify the work area about 14 to 20 times.

The manufacturer is Hamilton Standard division of United Aircraft Corporation.

• Science News Letter, 83:57 January 26, 1963

OCEANOGRAPHY

Ocean Rivers Measured By Deep-Sea Devices

► SUBMERGED oceanic rivers will be measured by deep-sea current meter devices.

Periodic recordings will be made of direction of flow, depth, velocity and direction of water flow. The measuring devices, which resemble oil cans, can be lowered to a depth of seven miles and operate for a month. Data are collected on 16 mm photographic film, one frame exposed every 10 minutes. The new instruments were developed by the General Dynamics Corporation.

• Science News Letter, 83:57 January 26, 1963

GEOLOGY

Earth's Crust Found Thicker in Colorado

► THE EARTH'S CRUST is 30 miles thick in eastern Colorado, only 10 miles thick in the fertile central valley of California.

It is 20 miles thick in the high mountains of central Nevada, a symposium on the structure of the earth's crust in the western United States was told in Denver. This new knowledge resulted from seismic probing of the earth's interior by underground nuclear and conventional explosions.

The explosions are part of the Vela Uniform program to find ways to detect, locate and identify underground nuclear explosions. To do this, the structure of the earth's crust must be known to determine the paths seismic waves travel from an explosion to different points on the earth's surface and how long the waves take to travel these paths.

The detailed study of the crust's structure in the West was under the direction of L. C. Pakiser of the Interior Department's Geological Survey. He said that the new information about the crust was based on a network of about 2,000 recordings of seismic waves from underground nuclear and conventional explosions.

The network extends from eastern Colorado to the California coastline, and from central Idaho to the Mexican border.

The thickest part of the crust being studied, Mr. Pakiser reported, is probably under the Colorado Rockies, where it may extend down as far as 40 miles.

• Science News Letter, 83:57 January 26, 1963

distance reduced to 62,100,000 miles. Still better oppositions will come in April 1967 and May 1969. And then comes the very favorable approach on Aug. 10, 1971, when Mars will be only 35,000,000 miles away—the best in the second half of the 20th century.

Next month Mars will be farther away—and fainter—than it is now, but will still be a prominent object in the evening. And so, in the article for the March evening skies, we will tell some of the interesting things that astronomers have already learned or surmised about this fascinating and mysterious planet.

Celestial Time Table for February

FEB. EST

1	3:50 a.m.	Moon in first quarter
2	10:00 p.m.	Mars nearest earth, distance 62,280,000 miles
3	4:00 a.m.	Saturn in conjunction with sun
8	1:00 a.m.	Moon passes Mars
	9:52 a.m.	Full moon
11	2:26 a.m.	Algol (variable star in Perseus) at minimum brightness
13	11:00 p.m.	Moon farthest, distance 251,600 miles
	11:15 p.m.	Algol at minimum
16	12:39 p.m.	Moon in last quarter
	8:05 p.m.	Algol at minimum
19	4:54 p.m.	Algol at minimum
20	10:00 a.m.	Moon passes Venus
23	9:06 p.m.	New moon
24	9:00 p.m.	Moon passes Jupiter
25	7:00 p.m.	Moon nearest, distance 225,000 miles

Subtract one hour for CST, two hours for MST, and three hours for PST.

• Science News Letter, 83:58 January 26, 1963

Drs. Oscar Frank, Herman Bakel, and Sheldon Aaronson, S. H. Hutner and C. M. Leevy reported this study. Tests with protozoa are underway in other laboratories.

• Science News Letter, 83:57 January 26, 1963

TECHNOLOGY

Side and Rear Fender Lights Fight Road Glare

► GLARE that stops autoists from seeing dangers on the road at night is neutralized by a new type of road lighting devised by Dr. Merrill J. Allen of Indiana University, Bloomington.

By means of auxiliary lights on the front bumper of a car which are directed to the road beside and behind it, the objects blacked out by the glare of an approaching car's headlights are made visible. Conventional sealed beam headlights are used.

• Science News Letter, 83:57 January 26, 1963

BIOLOGY

Tiny Yeasts Survive 50 Years in Antarctica

► TINY LIVING THINGS—yeasts, molds and bacteria—survived more than a half a century in a frozen food cache left in Antarctica by an ill-fated British expedition to the South Pole.

Material from a one-pound bottle of bakers' yeast was grown at the University of Texas, Austin, by Drs. George H. Meyer, Marie B. Morrow and Orville Wyss. It was divided into five parts from which cultures of two types of yeasts, two kinds of molds and three species of bacteria were grown.

Entire cultures of bacteria and yeast were developed from the lower three layers of the material.

The food cache, in which the jar of yeast was found, was left by the expedition of Capt. Robert Falcon Scott of the British Royal Navy in his expedition of 1911.

The research was reported in *Nature*, 96:598, 1962.

• Science News Letter, 83:57 January 26, 1963

CONSERVATION

Ducks Poisoned by Eating Shotgun Pellets

► LEAD POISONING kills an estimated four per cent of the total duck population each year, but the poisoning is caused by eating shotgun pellets and not by pellets buried in the flesh as a result of wounding by hunters, according to Wisconsin Conservation Department researchers.

The ducks mistake the lead shot for small stones and grit, which they eat and store in the gizzard for grinding up seeds and other hard foods. The digestive juices then act on the lead, forming toxic compounds that can cause sickness and death.

• Science News Letter, 83:57 January 26, 1963

ENTOMOLOGY

Citrus Mites Not Stopped By Florida Freeze

► FLORIDA'S December freeze, which ruined most of the citrus fruit crop, did not kill directly Texas citrus mites, major insect pests.

The drying and dropping of leaves and fruit removed some of the pests from the trees, but entomologists are not optimistic that the weather misfortune will reduce the pests to any large extent.

Severe damage by subterranean termites to homes around Christmas time is reported to the U.S. Department of Agriculture from Arizona's Salt River Valley.

Extensive warfare against cattle-damaging screwworms is reported from along the Mexican border of Texas and Arizona. More than 64 million screwworm flies made sterile by radiation were released in early December so that production of another generation will be interrupted. Airplanes are scattering 600 sterile flies each week over each of 100,000 square miles to provide a barrier zone against invasion from Mexico.

• Science News Letter, 83:57 January 26, 1963

No Case (Information Only)

early February 1963
Asuncion, Paraguay

20.

In Asuncion, Paraguay, a sighting was made in early February by a student named Anastacio Lenza, who saw a UFO land in the sports field of a local school. Saucer sightings were also made by several other residents, including a high official of the Ministry of the Interior, who saw a UFO go by at high velocity.

No Case (Information Only)

2 February 1963
Robertsville, Ohio

ROBERTSVILLE, OHIO:(2 miles south) 2/2/63
Time: 4:00 to 4:30 PM. A husband and wife
watched an object moving WNW at very slow
speed, less than 1000 feet by their esti-
mate. "It was just one very bright bluish
white light flashing i regularly and some
times it would not flash at all;the light
seemed to take on different shapes when
it flashed. There seemed to be a darkened
area by the light, but could not make out
any definite shape or form. There was no
sound."We called the Akron-Canton Airport
but they could not tell us, what it was."
No e specific information needed.

No Case (Information Only)

4 February 1963
Tucuman, Argentina

On the 4th of February, five photos of a UFO were taken in quick succession by Adolfo del Valle Rivero, an engineering student living in Tucuman, Argentina. Two of the pictures (too poor in quality to reproduce here) were published in the February 15th edition of "La Gaceta," a Tucuman newspaper. The pictures were developed right in the newspaper's own laboratory, and do not appear to be faked. They show what Rivero described as a saucer flying at relatively low speed at a distance of a half mile or so from the camera.

SAUCERS IN THE NEWS

Blenheim, New Zealand, February 4, 1963. On this date a housewife looked up into a cloudless sky and saw a silvery flying object, shining very brightly. Its size was 2 inches at arm's length. At first she could only see the underside of the object, but later it moved away and she could see the upper part and the portholes thereon. She observed it for about 3-4 minutes. Although the witness was not sure, she estimated the object's altitude at 10,000 feet or more. A drawing made by the witness shows an elongated half-moon-shaped object with a fin protruding from one end, with 5 portholes in the center. (Source: N.Z. Scientific Space Research Newsletter, March-April, via Robert J. Gribble, NICAP Reporter.)

No Case (Information Only)

February 1963
Piove di Sacco, Italy

NEWS BRIEFS: In Piove di Sacco, Italy, a young painter named Mario Salmaso claimed last February to have photographed a flying saucer and one of its occupants. He says he was walking alone through snow-covered woods when he saw a huge, round luminous object, near which was standing a man in an outfit which appeared to be made of cellophane. Salmaso took four pictures while the man climbed into the saucer and took off. Unfortunately, we have not seen any of these pictures, which must be quite sensational if they are genuine...

Piove Di Sacco, Italy, February 5, 1963. Painter Mario Salmaso, 21, claims he photographed a UFO and its occupant. He said he saw a huge round luminous object in the woods and a man nearby in a plastic suit which was transparent. Salmaso did not say how his pictures came out. The Planetary Center in Dearborn, Michigan is attempting to secure copies of the photo. (Source: United Press International.)

No Case (Information Only)
Source: Saucer News

5 Feb 1963
Glendale, California

Glendale, California, February 5, 1963. A UFO was spotted shortly before noon in the sky above Glendale. Air Defense public relations officers in Hollywood said they knew of no weather balloons in the area, although they had received several calls reporting the object. Officials said they and the Federal Aviation Agency were checking to determine what the object was. The object became lost in a cloud cover at about 11:45 A.M. Jet planes were sighted minutes after Air Defense was notified, in the same area where the object was last seen. (Source: Glendale News Press, 2/5/63. Credit: Robert J. Gribble, NICAP Reporter.)

NO CASE: Information Only
SOURCE: Flying Saucer Review
Nov-Dec 65

7 Feb 63
Alberti Province, Argentina

Alberti (Province of Buenos Aires)

According to the *Histonium Review* of February 7, 1963, a certain Señor Felix Carrizo and his wife were driving in their car to La Pampa when, at 6.30 p.m. of that same day, they perceived an extraordinary elongated object, intensely luminous, which was suspended at only a short distance from the ground. They stopped and got out to look at it, and Señor Carrizo took a photograph. The UFO then suddenly began to move, and vanished at fantastic speed. The photograph is reported by the paper to have turned out "astonishingly clear". I am trying to secure a copy of it.

14 Feb 1963
Mt Carmel, California

Carmel, California, February 14, 1963. Arthur Connel of Pebble Beach said he spotted a bright flying object over Carmel as he was out walking. He described it as having a long tail and said it appeared to be falling very rapidly. He estimated its height at 30,000 feet and its falling speed at 1200-2000 m.p.h. Connel said the object's trajectory took it out over the ocean before it disappeared. He said he did not think it was a shooting star because he had never seen one that close. (Source: Monterey Peninsula Herald, 2/15/63, via Robert Gribble, NICAP Reporter.)

NEWS BRIEFS: On February 16th an Australian dairy farmer named Charlie Brew reported seeing a flying saucer which sent his horse and a herd of cattle into a panic. The object appeared at 7:00 a.m., as Mr. Brew and his son were milking their cows. It descended at a low rate of speed to a height of only 75 to 100 feet above the ground. It looked as if it were going to land, and then suddenly shot off in a westerly direction, disappearing into a cloud. The UFO was about 25 feet wide and looked like a thick disc. It was battleship gray in color and appeared to have a band of glass or plastic around its circumference. There were also a number of protrusions. The UFO revolved and made a whooshing sound, according to Mr. Brew..

Hallucinated cows?

We are indebted to Lieut. A. R. Holden, M.V. Arm., for the following items from New Zealand. On February 16 the Auckland Star printed his report: "Farmer Charlie Brew's cows 'turned somersaults' in fright when a mysterious flying object visited his farm near Moe, 80 miles south-east of Melbourne, yesterday. Mr. Brew told reporters his son Trevor and he were milking cows shortly after 7 a.m. when he saw an object descending through the rain to a height of between 75 and 100 feet.

"I thought it was going to land but it suddenly shot off to the west at two or three times the speed of a jet and disappeared into a cloud," the farmer said.

"Mr. Brew said the object was about 25 feet wide. It looked like a thick grey disc with a transparent band round its circumference and a number of scoop-like protrusions. His son heard the pulsating, whooshing sound it made as it revolved overhead.

"The cows turned somersaults and the horses reared in panic.

"Mr. Brew added that he had often laughed at people who said they saw such objects—but this was the real thing."

Colonel Nash of the Liaison Office (?) at the House of Representatives called to report and inquire about a sighting over Winslow, Arizona on 28 Feb 63.

The sighting took place from 5:30 to 6:30 PM Pacific Standard Time.

Seen by the pilot of a jet aircraft and Congressman John Bell Williams (a former Air Force pilot).

Altitude was given as 45 degrees - 60 miles.

The object appeared as a ring in the sky.

Colonel Nash would like to speak with you.
His number **1S** OXford 55719 or 62526.

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Additional Information on Comet available in March and April, 1963 issues of "Sky and Telescope".

THE A.P.R.O. BULLETIN

The A.P.R.O. Bulletin is the official copyrighted publication of the Aerial Phenomena Research Organization (APRO), 4745 E. Desert Place, Tucson, Arizona, and is issued every other month to members only. The Aerial Phenomena Research Organization is a nonprofit group dedicated to the eventual solution of the mystery of the unidentified objects which have been present in the skies for hundreds of years. Inquiries regarding membership may be made to the above address.

TUCSON, ARIZONA - JULY, 1963

SAUCER PANICS CATTLE

From Peter Norris comes the following information gleaned from "The Sun". Dairy farmer Mr. Charlie Brew of Ole Sale Road, Willow Grove, northwest of Moe, Australia, has reported that a "thick disc" frightened a horse and his cow herd on 16 February 1963. The disc, "battleship grey" in color, appeared to have a band of glass or plastic around the circumference and number of protrusions which looked like scoops, according to Brew.

Mr. Brew and his son Trevor were milking the cows at shortly after 7 a. m. on the morning of the 16th. It was raining heavily at the time. Brew looked out of the cow shed, saw the object coming down in a fairly steep but slow descent. Brew said he thought it was going to land when it reached an approximate altitude of 75 to 100 feet. Suddenly, however, it shot off in a westerly direction at what seemed to be about two or three times the speed of a jet, then it disappeared into a cloud.

Trevor did not see the object, Brew reported, but he did hear the "putting-whooching" sound it made as it revolved overhead. "The cows turned somersaults and the horse reared up in panic," Mr. Brew said. "The whole visit lasted only a matter of seconds."

Brew admitted that he had often scoffed at reports of UFOs but swears the thing he saw was real. If more information comes in as a result of Mr. Norris' investigation, it will be printed in this or a forthcoming issue.

IAPA PRESENTS A -1963- SEP 63
SPECIAL REPORT ON
WILLOW GROVE, AUSTRALIA SIGHTING
FEBRUARY 15, 1963

(Editors Note: On the 15th of February of this year, Mr. Charles Brew of Willow Grove, Victoria, Australia, observed a UFO hover over his dairy farm. The Original account of Mr. Brew's sighting was published in our June issue. Recently, the Victorian Flying Saucer Research Society, P.O. Box 32, Toorak, Victoria, Australia, sent us a transcript of a tape-recorded interview between Mr. Brew and Mr. Peter Norris, President of V.F.S.R.S. Along with this transcript are letters from the Australian Air Force & Government regarding Mr. Brew's sighting, as well as a drawing of the UFO seen by Mr. Brew. We present here the full transcript of the tape, as well as photocopies of the letters & drawing).

Question: What time did you make the sighting, Mr. Brew?

Answer: It would be about 10 past 7, it was. Yes, 10 past 7, definitely.

Q. What were you doing at the time?

A. We were milking and half-way - approximately halfway - through, I'd say.

Q. Yes. How did you notice the object come down?

A. Well, I was lookin' out over the cows as I referred to you a while ago and it came down very steeply out of the east. Oh, I'd say about 45 degrees.

Q. And what did the object look like when you first saw it? What were your reactions?

A. Well, I thought it was a helicopter at first.

Q. What made you think that?

A. On account of it being round and I've naturally never, ever seen one of these turnouts before. That would be asking too much!

Q. Yes, and what did you see when the object came fairly close to you?

A. Oh well, I noticed first of all the coloring and after that, the top 2/3 when it came down & hovered, was stationary and the lower section was turning anti-clockwise - noticed that - and also as I pointed out, those scoop-like protrusions around the side which I think was making the noise - the swishing noise, that is.

Q. And at this stage, how far was the object from you?

A. Oh I'd say 75 feet away - perhaps a little further - and about the same distance up in the air.

Q. How did you calculate the height of the object?

A. Well, I calculated the height by those trees. I'd say they were approximately 75 feet high. It might have been a shade higher than those, of course.

Q. Yes, that would be quite right I'd say. Now once again, getting back to the general appearance of the object, can you describe the top part of the object?

A. Well, the top, the very top section, the dome section, that is, was sort of what we would call Perspex or glass material or whatever you like but whatever that was, I couldn't say. The middle section, that is the middle section between the Perspex and the part that was rotating, was sort of battleship grey and looked to me like some bit of metallic material. I couldn't say for sure, of course, and the bottom as I said was rotating in an anti-clockwise direction. Well I couldn't say what sort of material it was definitely made of but the Air Force chaps asked me that too. As near as I could say, it seemed something the same material as motorcars. Just by lookin' at it, you know.

Q. What was the size of the object?

A. Well, I'd say as near as I could judge, about 25 feet across - well perhaps a little more - if anything a little more.

Q. What about the height?

(interview continued, next page)

- A. Oh, I'd say overall, about 9 feet as near as I could judge. Might have been a bit more but of course it's hard to judge when you only see a thing for a few seconds, but I'd say 9 or 10 feet.
- Q. You didn't actually see anybody in it through what appeared to be the glass portion on top, on the dome?
- A. No, on a clear day you might have but as I said, it was raining heavy and so, I can honestly say that I didn't see anybody although I was lookin' hard enough.
- Q. Looking at the object from the underneath part, what did you see there?
- A. Well, when it was hovering, I could see these scoop-like things - protrusions - or whatever they were, which seemed to be making the swishing noise. After that, when it took off, it was the bluish or pale bluish color underneath. That's as near as I can tell you, as much as I can tell you really, about the lower section.
- Q. And when it took off, what did you notice? Well first of all of course, it did hover, did it, for some little time?
- A. Well I'd say for space of 4 or 5 seconds, which is not long, I know.
- Q. Yes, and then after that it took off, did it, and if so, at what speed would you calculate?
- A. Oh well, we reckon, Trevor (Mr. Brew's son) and I reckon, a jet would probably have to add up speed to match the speed.
- Q. And it took off instantly?
- A. Yes, flying from a flying start - you know, not a flying start but a standing start - and very fast and very steep.
- Q. It went straight up, did it?
- A. I'll say it came in and went out at about the same angle of 45 degrees, as near as I could judge.
- Q. Getting back to the appearance of the object, I think you said you noticed something on top of the dome?
- A. Yes, it seemed to be an aerial sort of thing - I'd say about 5 or 6 feet long and it did seem to be either chrome or some lightish metal thing. Whether it was the aerial or not, I couldn't say. I was speaking to the other chap and he said it was.
- Q. I know there were some cows and other stock in the yard at the time of the sighting, Mr. Brew?
- A. Yes, we had half done. We were halfway, half of them were milked out and the other half still had to go through.
- Q. What was their reaction to the sighting?
- A. Well, as I said to the other chap that was here, they done everything but turn somersaults. They put in the paper that they did turn somersaults but that's carrying it a bit too far! They certainly played up. I've never seen cows play up like that before and they never taken notice (quite happy before) of an ordinary jet. A jet can go over and they never take no notice of it at all but they really played up this day.
- Q. Did you have anybody helping you milk the cows?
- A. Yes, I had Trevor there and as I said, unfortunately he never seen it but he did hear it and he said: "What was that?" and I said: "A flying saucer," and he said: "Don't be so and so silly, you know those things don't exist" or something of that effect and I said: "Well this was a flying saucer, definitely." He said: "Well it certainly moved off the mark, it travelled twice as fast as a jet." I said: "Well it certainly went away fast, just like somebody had it on a blooming yo-yo or something. Really went off with a bang."
- Q. So he didn't hear it until it actually moved away and then, of course, it was too late?
- A. No, he didn't see it unfortunately but he certainly heard it go.
- Q. Have you been interviewed by any representatives of the government?

(interview continued, next page)

- A. Yes, as I said, the C.S.I.R.O. (Commonwealth Scientific & Industrial Research Organization) were here and number 1 question as far as they were concerned - he asked me did I get a headache. I said: "Well it's strange that you should ask me that because I thought it was too ridiculous, I would have never mentioned it. But I did get an awful headache just behind the eyes. I never suffer with headaches normally and I took a Bex and I went in but it didn't seem to have any effect. It just wore off itself towards the night - took all day long to wear off."
- Q. When did you first get the headache?
- A. Oh, when I was gazing at the Perspex canopy business I noticed it.
- Q. It came on immediately, did it?
- A. Yes, more or less. Yes, yes.
- Q. What did the C.S.I.R.O. man say? Incidentally, do you know his name? What's his name?
- A. Er, Mr. Berson. Yes, Mr. Berson was his name.
- Q. And what did he say about the headache?
- A. "Well," he said, "that ties in with our theory, we always had the impression that it was...." (what would you say?) he gave me the impression it was electromagnetic or something to that effect - that's beyond me - but he said that would more than likely cause a headache and it certainly took all day to get rid of it, anyhow. I know that.
- Q. What else did the C.S.I.R.O. do?
- A. Well, as I said, he took away samples of rock - they were very interested in that - because he said being a sort of iron stone, it may have some attraction for it. And there is the reef as I said and winds right through here and it came over that reef, more or less parallel with it.
- Q. How long after the sighting occurred did the C.S.I.R.O. come down here?
- A. They were here about 4 days after and the Air Force about a week, or near the best part of a week after that.
- Q. Oh, the Air Force came down as well, did they? Who came down from the Air Force?
- A. Well, Mr. Murdoch was one of them, the only name I can recall.
- Q. Was he in uniform?
- A. Yes, they were all in uniform.
- Q. They were officers, were they?
- A. Yes, I would say high officers, high-ranking officers, anyhow.
- Q. What did they do?
- A. Well, they photographed the surrounding country, that was the Baw Baws, Mt. McDonald. Long distance cameras and too light, cloud and cloud plus, you know, how much blue was showing in the sky - all that sort of thing. It's a bit beyond me, some of the things they done but, all those things.
- Q. Did they have instruments?
- A. Yes, they had the cameras and they lay tapping rocks and took particular notice of the rock formation also. Don't know for what reason they did. Yes, they said that after I drew them the sketch that it was similar to sightings in other countries. It tallied almost exactly to what's been seen over there, but they didn't think it was quite so big as that. Yes, they said it was approximately, to the best of their knowledge the lowest it had been & the best sighting.
- Q. That was in Australia, was it?
- A. Yes, from what I could gather, here.
- Q. Did anyone else come down from the government?
- A. Yes, I had the aeronautical expert from, I think, liason officer I think that was the Sale Air Base. He asked similar questions and he wanted to know if there was any engine noise but we never heard any engine noise, not as we know engines today.
- Q. To get back to the object itself, did you notice any light coming from the object itself at any time?
- A. No. There was no light in the dome business and no lights underneath.

.....



COMMONWEALTH OF AUSTRALIA

TELEPHONE:

M9

TELEGRAPHIC ADDRESS:

"AIRFORCE CANBERRA"

IN REPLY QUOTE 580/1/1(11)

DEPARTMENT OF AIR

CANBERRA, A.C.T.

1 APR 1963

Mrs. S. Sutton
Hon Sec
Victorian Flying Saucer Research Society
PO Box 32
TOORAK VICTORIA

Dear Madam,

1. I refer to your letter dated 8th March, 1963, regarding the investigation of a sighting of an unidentified object by Mr. Charles Brew.
2. Our investigation and enquiries reveal that there are scientific records of certain tornado-like meteorological manifestations which have a similar appearance in many ways to whatever was seen by Mr. Brew.
3. The information available is such however, that while we accept this as a possibility, we are unable to come to any firm conclusion as to the nature of the object or manifestation reported.

Yours faithfully,

A. B. McFarlane
(A. B. McFarlane)
SECRETARY

COMMONWEALTH



OF AUSTRALIA

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

DIVISION OF METEOROLOGICAL PHYSICS

TELEPHONE: 90 3331

TELEGRAMS: COMRESEARCH, ASPENDALE

STATION STREET,

ASPENDALE, S.13.

VICTORIA

REF : 1(z)

FAB :LM

8th April, 1963.

Mrs. S. Sutton,
Hon. Sec.,
Victorian Flying Saucer Research Society,
P.O. Box 32,
TOORAK.

Dear Madam,

I apologise for the delay in answering your letter of the 19th March last.

I visited Mr. Brew in company of a friend of mine, but we did not take any rock sample. But I know that somebody else did.

To obtain more information about the mentioned sighting, please contact the R.A.A.F., Dept. of Air, Canberra, who were investigating this case.

Yours faithfully,

(F. A. Berson)

16 February 1963
Barberton, Ohio

LOCAL SIGHTINGS: BARBERTON - 2/16/63 8PM
A husband and wife, were driving south on Rock Cut Rd. As they neared Johnson Rd., they noticed a very large light ahead and to the east of the road. They pulled over alongside the object & got out of the car to observe it. When first seen, the wife thought it was stationary but the husband seemed to think it was moving, but almost imperceptively. The objects size was like a 10"-12" plate. They estimated the object to be 50-100 feet high and about 200-feet away. Elevation, approximately 25', reddish orange color, spherical, sharply-outlined, but not of a blinding intensity. In the one minute that the observers watched, the object proceeded with great deliberation northward. It proceeded steadily at the same altitude, no change in its color intensities, blinking etc. It had no red or green or oscillating lights, it had absolutely no sound. The wife at this time expressed fear, so they proceeded to a relatives's place about 2-3 min., away. The wife then phoned the news to her next door neighbor. Two high school girls at the house went out and after scanning the sky a few minutes, saw an object a little larger than "Echo" going north. The object was seen through 7x50 binoculars-they described it as flame colored. The object they saw was much higher and proceeding N- at "slow airplane velocity"; it veered NW and was lost to view. No sound was heard -no red or green lights were visible, the light was steady, no vapor trails etc.

No Case (Information Only)

18 February 1963
Maiden, North Carolina

Maiden, North Carolina, February 18, 1963. Floyd Hester and another witness said they saw UFOs high in the sky on this morning. The objects were flying at about 15,000 feet and were weaving in and out of formation at tremendous speeds. "They were not birds and were too fast for jets," said Mr. Hester. He watched them for about 30 minutes. At times they appeared motionless in the sky, then would move in a burst of speed. They left no trail of smoke.

Correspondent Jerome Clark of Canby, Minnesota, was given further information by a friend who interviewed Mr. Hester: At 2:30 P.M. Mr. Hester and his friend, a Mr. Moretz, first saw the objects. They looked metallic & were flat on top. The 2 witnesses thought they were going to collide, but they didn't. The objects disappeared behind clouds. Mr. Hester received letters from Washington about the sighting.

...UFO's were seen darting about at an altitude of 15,000 feet over Maiden, North Carolina, on the morning of February 18th. Floyd Hester told the local newspaper that they were moving in and out of formation at tremendous speeds. He described them as metallic in appearance, and said they were in view for 30 minutes. At times they would hover motionless in the sky, and then would move with a burst of speed. They left no trail of smoke....

No Case (Information Only)

18 Feb 1963
Reno, Nevada

Reno, Nevada, February 18, 1963. A large bright glowing object was sighted in the Reno area for almost 30 minutes today at 5:30 P.M. It was pulsating and had a red tail. Uninterested officials said it was probably a weather balloon. (Nevada State Journal, 2/19/63, via Robert J. Gribble, NICAP Reporter.)

SAUCERS IN THE NEWS

Belgrade, Montana, February 22, 1963. An object described as "a strange red ball of fire" startled Bill DeHaan as he was driving home at 2:30 A.M. this morning. Telephones were disturbed and many people reported they were awakened "by something". DeHaan said the "strange red ball" shook and swayed his car when it landed about 200 feet from his car. Sheriff's officers said they could find no trace of the object after combing the area. (Source: Bozeman Mont. Daily Chronicle, 2/22/63. Credit: Robert J. Gribble, NICAP Reporter).

A "strange red ball of fire" was seen by Bill DeHaan of Bozeman, Montana, at 2:30 a.m. on February 21st, as he was driving home from work. DeHaan said that the UFO shook and swayed his car as it went by, and that it landed about 200 feet from his vehicle. Sheriff's deputies spent the morning combing the area, but found nothing.....

Source: Flying Saucer Review (Jul-Aug 63)

On February 28, 1963, an unusual ring-shaped cloud was widely observed over northern Arizona near sunset. From a large number of observers' reports it was known to have appeared overhead near Flagstaff, Arizona. From initial computations based on four photographs taken in Tucson, 190 miles south of the cloud, its altitude was approximately 35 kilometres. Tentatively, the cloud could be regarded as similar to a nacreous cloud, but its unusually great height and unusually low altitude, plus its remarkable shape, suggest that it was a cloud of previously unrecorded type.

The cloud took the form of a large oval ring clear in the middle, with long axis running north and south. It remained brightly illuminated well after the sun had set on high cirrus clouds to the west.

From approximately 150 reports, many communicated by persons well aware that they had seen a type of cloud unprecedented in their experience, it was quickly established that it exhibited little or none of the features associated with mesospheric nacreous clouds in the Arctic and that its internal structure was very peculiar. To observers nearby, the cloud's colour, green and blue white, and a pinkish hue were noted at times. A liberal number, described by several independent observers as resembling a "wood grain" appearance, was present over much of the northern extent, but its southern end was denser and more uniform.

As the magazine *Science* remarks, it was fortunate that within a few miles of the cloud, the U.S. Weather Bureau at Winslow, Arizona, was situated, and a high-altitude sounding had been completed there only an hour before the appearance of the cloud. A jet stream lay almost directly under the cloud.

This cloud has caused much speculation in scientific circles, not only because of the cloud's unusual shape, but also because it was observed in an area not much given to cloudy conditions.

NO CASE (INFORMATION ONLY)
SOURCE: AFRO BULLETIN JAN 64

21 February 1963
Trenton, New Jersey

Splitting Object Seen in NJ

Miss Alice Harney, age 16, of Trenton, New Jersey, made an unusual UFO sighting on the night of February 21, 1963. Time of night was not noted. The object, which was seen out of a window, was described as a large blob of light. Its distance was about 3 city blocks away or possibly more and it was motionless. No color was mentioned. The object began to move, stopped, then split into two small discs. These then moved away. The observer reported that there was no sound to indicate the presence of any conventional aircraft.

No Case (Information Only)

23 Feb 1963
Nagoya, Japan

Nagoya, Japan, February 23, 1963. Eleven students saw a "disc" over their school as they stepped outside at 5:30 P.M. The round object, as big as a thumb at arm's length, traveled in a northeast to northwest course, and took about 5 minutes to pass over them. It threw out red beams while remaining completely silent. (Source: Mainichi Daily News, Tokyo, 2/24/63, via Robert Gribble., WICAP Reporter).

No Case (Information only)

25 Feb 1963
Orchard City, Colorado

Orchard City, Colorado, February 25, 1963. A swift-flying, silvery object with a long tail was seen by many persons from Eckert to Crawford (Colorado) and first reported by Mrs. Fred Filner of Orchard City. (Source: Delta, Colo. Independent, via Robert Gribble, NICAP Reporter).

27 Feb 1963
Modesto, California

Modesto, California, February 27, 1963. A UFO - described as moonshaped and changing in color - was reported seen north and west of Modesto by at least 7 area residents. According to an eyewitness, the object hovered, dropped from 5000 feet to 1000 feet, emitted a bright streak from its underside for 15 seconds, hovered again and returned upwards, disappearing over the horizon. The object - crescent shaped with portholes - seemed to be large; 300 feet in diameter at a minimum. Source: Modesto Bee, 2/28/63, via Robert J. Gribble, NICAP Reporter).

No Case (Information Only)

28 Feb 1963
Mt Carmel, California

Carmel, California, February 28, 1963. Sheriff's deputies John Crisan and Jerry Webster reported seeing a UFO today at 1:05 P.M. on top of Carmel Hill. They said they drove to the spot after receiving a radio call from Salinas saying that the object had been spotted from that area by Deputy Rudy Carillo. It had a crescent shaped tail and was visible for about 2 minutes. (Source: Monterey Peninsula Herald, via Robert J. Gribble, NICAP Reporter).

1 - 31 MARCH 1963 SIGHTINGS

DATE	LOCATION	OBSERVER	EVALUATION
Spring	Toussville, Alabama		Other (TEST VEHICLE)
Mar	Garden City, Michigan		AIRCRAFT
1	Germany	Military	Astro (METEOR)
6	Louisiana, Arkansas, Texas	Military (RADAR)	Astro (METEOR)
6	Houston, Texas	Military	Astro (METEOR)
6	Southern California		Other (METALLIC PARACHUTE FROM PT MUGU)
11	San Diego, California		Other (ATLAS MISSILE)
11	Honolulu, Hawaii	Multiple	Other (ATLAS MISSILE)
12	41.35N 146.17E (Pacific)	Northwest Airline	Astro (METEOR)
13	4.35N 176.41W (Pacific)	Military	INSUFFICIENT DATA
14	34.57N 176.43W (Pacific)	Military	Astro (METEOR)
15	03.45S 168.19W (Pacific)	Military	INSUFFICIENT DATA
15	36.32N 174.02W (Pacific)	Military	SATELLITE
17	Naperville, Illinois	Multiple	INSUFFICIENT DATA
17 - 31	North Andover, Massachusetts		Other (UNRELIABLE REPORT)
17	Crestview, Florida	Military	Other (BIRDS)
18	47.20N 169.50W (Pacific)	Military	SATELLITE
18	San Juan, Puerto Rico	Military	INSUFFICIENT DATA
18	San Bernardino, California		Other (UNRELIABLE REPORT)
20	Opa Locka, Florida		Other (PHYSIOLOGICAL CAUSES)
21	Lebanon, Ohio		BALLOON
23	Babylon, New York	Civilian	SATELLITE
23	Atlanta, Georgia		Astro (METEOR)
24	Dayton, Ohio	Military	SATELLITE
25	Chevy Chase, Maryland		Astro (METEOR)
26	Duluth & French River, Maryland	Multiple, Military & Civilian	Astro (METEOR)
27	32.17N 117.22W (Pacific)	Military	SATELLITE
28	35.00N 48.00W (Atlantic)	Military	SATELLITE
31	Dayton, Ohio		SATELLITE
31	Brooklyn, New York		AIRCRAFT

ADDITIONAL REPORTED SIGHTINGS (NOT CASES)

DATE	LOCATION	SOURCE	EVALUATION
Mar	Universe	Science News Ltr	
2	Yeovil, England	Flying Saucer Review	
6	Cleveland, Ohio	FSIC	
6	Wimbledon, London, England	Flying Saucer Review	
9	Lewistown, Montana	Saucer News	
10	Didcot, England	Flying Saucer Review	
12	Albany, New York	Saucer News, IAPA	
20	Rathlin Island, Ireland	Flying Saucer Review	
21	Wallsend, England	Flying Saucer Review	
22	Akron, Ohio	FSIC	
22	Richardson, Texas	APRO Bulletin	
24	Akron, Ohio	FSIC	
26-27	Akron, Ohio	FSIC	
27	Canton, Ohio	FSIC	
28	Portage Lakes Area, Ohio	FSIC	
31	Wooster, Ohio	FSIC	

Information Only

Source: AFPO Bulletin, January, 1964

Record Breaking Cloud Formation Over Southwest

At sunset on February 28, 1963, an oval-shaped, ring-shaped cloud of silvery-white color was observed by hundreds of people in Arizona, New Mexico and California. It was seen as far south as Tucson, Arizona, Albuquerque in the east and Los Angeles in the west. Its diameter was approximately 50 miles, with the cloud's south end sweeping over Flagstaff, Arizona. As night advanced, it became apparent that the odd phenomenon was luminous and not just lighted by the sun.

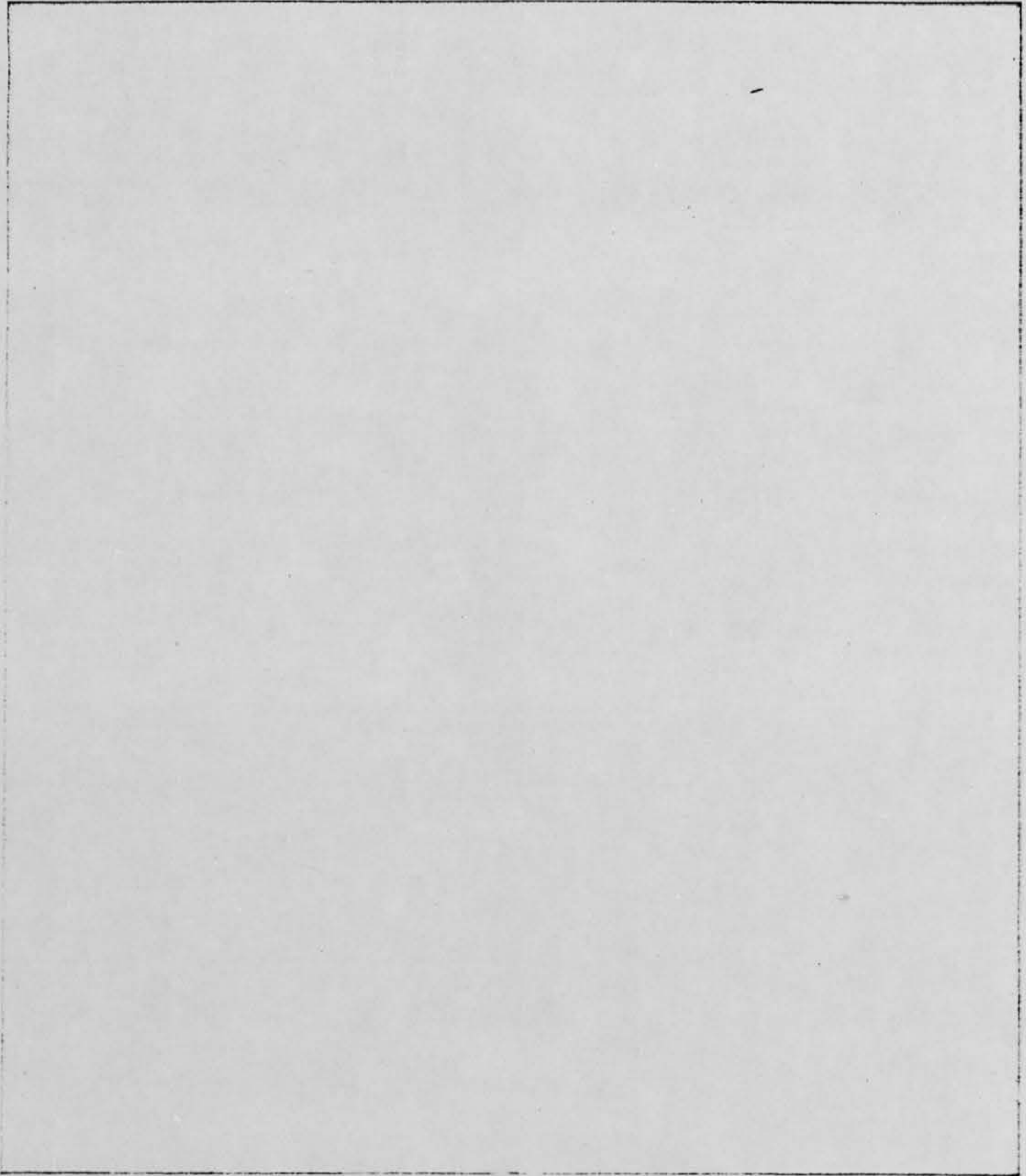
Studies conducted by University of Arizona Atmospheric Physics Lab Chief Dr. James MacDonald showed its height to be an incredible 149,000 feet or 45 kilometers. He stated that the cloud was higher than any ought to be. In a conversation with Mrs. Lorenzen by telephone, he used the word "fantastic" to describe the phenomenon. The upper limit for clouds composed of water droplets or ice crystals is 42 kilometers, considerable lower than the altitude of the February formation. The highest known clouds, which are designated as nacreous or "mother-of-pearl" are usually observed only in arctic regions. They can reach a height of 100,000 feet. Being shapeless and formed by air moving up over mountains into a region of severe cold, they are the record-holders. It should be noted that atmospheric conditions around Flagstaff are not conducive to this type of cloud.

During her conversation with Dr. MacDonald, Mrs. Lorenzen was informed that he was checking with missile sites to see if a high-flying missile might account for the formation but to date the origin of the cloud has not been determined. It remains a mystery. It has been suggested by many that the object might have been extra-terrestrial in origin, or in other words, a vapor trail (perhaps "angel's hair") of sorts made by a high-flying space craft.

Stratospheric Cloud over Northern Arizona

James E. McDonald

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Stratospheric Cloud over Northern Arizona

Abstract. *An unusual ring-shaped cloud was widely observed over northern Arizona near sunset on 28 February 1963. From a large number of observers' reports it is known to have appeared overhead near Flagstaff, Arizona. From initial computations based on four photos taken in Tucson, 190 miles south of the cloud, its altitude was approximately 35 kilometers. The most distant observation reported was made 280 miles from the cloud. The cloud remained sunlit for 28 minutes after local sunset. Iridescence was noted by many observers. Tentatively, the cloud may be regarded as similar to a nacreous cloud; but its unusually great height and unusually low latitude, plus its remarkable shape, suggest that it was a cloud of previously unrecorded type.*

Near sunset, on 28 February 1963, a cloud of unusual configuration and coloration was observed in widely scattered localities in Arizona and some surrounding states. The cloud took the form of a large oval ring (clear in the middle) with the long axis running north and south (Fig. 1 and cover photograph, this issue). It remained brightly illuminated well after the sun had set on high cirrus clouds to the west. From Tucson, 190 miles to the south, its angular elevation appeared to be about 6 degrees. A rough computation of its height, based on sunset geometry (1), made immediately after the cloud entered the earth's shadow, led me to appeal by press and radio for confirmatory reports in order to establish the approximate location and to secure descriptions from the largest possible number of other observers.

From approximately 150 reports, many communicated by persons well aware that they had seen a type of cloud unprecedented in years of skywatching, it was quickly established that the cloud lay overhead in the vicinity of Flagstaff, Arizona, that it exhibited iridescence of the sort associated with stratospheric nacreous clouds in the arctic (2, 3), and that its internal structure was very peculiar. To observers nearly underneath, the colors green and blue were visible, and a pinkish cast was noted at times. A fibrous texture, described by several independent observers as resembling a "wood grain" appearance, was present over much of its northern extent, but

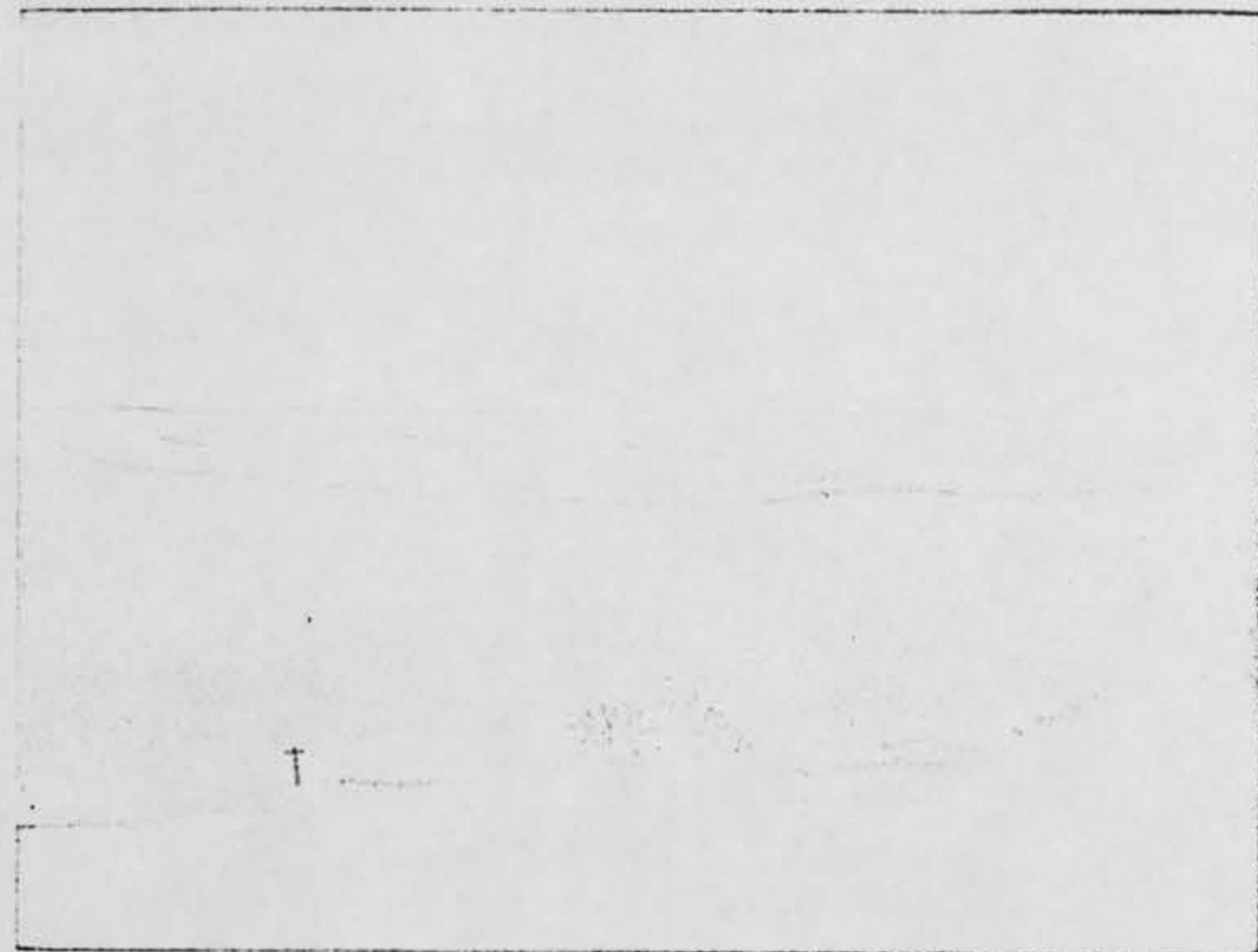


Fig. 1. Stratospheric cloud over Flagstaff, Arizona, from a point about 160 miles east-southeast, after sunset. The dark clouds in the west are cirrus clouds on which the sun has already set. [I. E. Daniels, Springerville, Arizona]

its southern end was denser and more cumuliform. Its overall shape was compared by some (ranchers) to a horse-shoe or a horsecollar if it was viewed from the south; from the north it appeared as a closed loop with a long thin trail that could be seen extending northward, from the oval, and several observers in that sector compared its shape with that of a "hangman's noose." The cloud was seen from distances as great as 280 miles (near Douglas, Arizona, and Albuquerque, New Mexico, respectively).

Many observers reported a second cloud off to the northwest of the main cloud, with shape very much like that of the main cloud, but only about a quarter as large. Correctness of these reports has been established from some of the first photographs that have come in from northern Arizona. The cloud was evidently moving generally southeastward, though visual reports are in some conflict on this point; this point can only be resolved from further studies by triangulation.

By fortunate coincidence, the cloud appeared within a few tens of miles of the U.S. Weather Bureau radiosonde station at Winslow, Arizona, and a high-altitude sounding had been completed there only an hour before the appearance of the cloud. A jet stream lay almost directly under the cloud and over Flagstaff, and there were peak

winds of 98 knots from the northwest occurring over Winslow at an altitude of about 11 kilometers. The radiosonde run terminated at the 13-millibar level of atmospheric pressure (about 29 km), where the temperature was -46°C . There was very little direction shear in the Winslow wind sounding, a condition known to favor formation of mountain waves and believed to be conducive to nacreous clouds, at least in Scandinavia (2). It is possible, therefore, that the San Francisco Peaks just north of Flagstaff disturbed the flow so that wave motion was set up in the stratosphere, but this remains a conjecture, pending further study of reports of first appearance. Whereas some recent studies (4) suggest strong local stratospheric cooling as a prerequisite for the formation of nacreous clouds, the sounding at Winslow showed little departure from average temperature conditions in the lower and middle stratosphere.

Photogrammetric analysis of the four photographs known to have been taken in the Tucson area have yielded elevation angles of the near point ranging from 5.9 to 6.2 degrees. Because the exact range to the nearest point of the cloud is not yet known to better than about 10 or 15 miles in 190 miles, the exact height cannot yet be determined. However, the cited elevation angles plus allowance for earth curvature give

a cloud height of 35 kilometers, possibly a bit higher if the range to the near point proves to be greater than 190 miles. This height is distinctly greater than that of reported Scandinavian nacreous clouds. Photogrammetric heights obtained over many years by Stormer and others (2, 3) are no higher than 30 kilometers, and the majority lie between 22 and 28 kilometers.

The estimated height of 35 kilometers rules out the possibility that the Flagstaff cloud could have been the condensation trail from a jet plane. The present American altitude record, made under the most favorable conditions directly above the home field by a Lockheed F-104 in 1959, is 103,395 feet (31.6 kilometers). Perhaps more conclusive is the fact that the upper limit of height for possible contrail formation (5) as indicated by the sounding from Winslow was just under 24 kilometers at the time of the cloud's appearance.

These preliminary indications mark the Flagstaff cloud of 28 February as a most unusual phenomenon of considerable meteorological interest. Requests for photographs, still being made at time of this writing, have already brought promises of photographs from a total of 16 sites reasonably well dispersed around Arizona, so fairly precise data on the cloud's height, shape, and dimensions should be obtainable by triangulation. A conflict between heights estimated from the Tucson photos and from sunset geometry is under study (the indicated height based on available reports of fadeout time is about 25 kilometers). Premature fadeout may have been due to cirrus clouds between the cloud and the ray-tangency point, computed to lie at or very near Los Angeles.

The hydrodynamics of the field of vertical motion that produced such a toroidal cloud form are very puzzling. Present estimates give the closed oval a length of about 60 kilometers and a width of about 30 kilometers, with a ring cross section of perhaps 3 to 4 kilometers in the horizontal. I am not aware that a cloud of such form and size has been observed at any level within the atmosphere before. Interesting questions about the source of the requisite water vapor are posed by its unprecedented altitude (6).

JAMES E. McDONALD

*Institute of Atmospheric Physics,
University of Arizona, Tucson*

References and Notes

1. S. K. Mitra, *The Upper Atmosphere* (Asiatic Society, Calcutta, ed. 2, 1952).
2. E. Hesstvedt, *Geofys. Publikasjoner Norske Videnskaps Akad. Oslo* 20, No. 10 (1959).
3. A. Y. Driving, *Bull. Acad. Sci. U.S.S.R. Geophys. Ser. 3, English Transl.* (1959), pp. 279-286.
4. Y. Gotaas, *Geofys. Publikasjoner Norske Videnskaps Akad. Oslo* 22, No. 4 (1961); A. Y. Driving and A. I. Smirnova, *Bull. Acad. Sci. U.S.S.R. Geophys. Ser. 3, Eng. Transl.* (1958), pp. 187-191.
5. H. Appleman, *Bull. Am. Meteorol. Soc.* 34, 14 (1953).
6. I thank Leon Salanave for alerting me to the cloud when it became visible in the Tucson sky and for further technical assistance, and I. E. Daniels and C. E. Peterson for permission to reproduce their photographs. The cooperation of the numerous Arizonans submitting reports is gratefully acknowledged. Supported by the Office of Naval Research under contract NR 082-164.

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INSTITUTE OF ATMOSPHERIC PHYSICS
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ASTRONOMY

Mars Now Closest to Earth

The red planet Mars, closer than it has been for two years, shines brilliantly in the February sky, but brighter still is Sirius, the dog star, James Stokley reports.

➤ OVER in the southeastern sky on February evenings you will see a brilliant object shining with a distinctly red color.

This is the planet Mars, now closer than it has been in about two years; closer than it will be for about two years to come. It will be nearest on Feb. 2, when it will be 62,280,000 miles away. And because of this relatively close approach, it is shining brilliantly. Its magnitude, using the astronomer's scale of brightness, is minus 0.9.

However, Mars is not as bright as the star known as Sirius, the dog star, in the constellation of Canis Major, the great dog. This is in the south, lower and to the right of Mars. Both star and planet are shown on the accompanying maps, which depict the sky as it looks about 10:00 p.m., your own kind of standard time, at the first of February; 9:00 p.m. at mid-month and 8:00 p.m. at the end. The magnitude of Sirius is minus 1.4, or about 58 per cent brighter than Mars, although we see it somewhat dimmed. Being lower than Mars, some of its light is absorbed by the greater thickness of the atmosphere that it must penetrate.

Mars in Cancer

Mars is in the constellation of Cancer, the crab, which is not a very conspicuous group of stars. Toward the left and a little lower is Leo, the lion, with first magnitude Regulus, represented by the symbol for a fainter body because it is low enough in the sky that its light is somewhat dimmed by atmospheric absorption. To the right of Cancer is Gemini, the twins. In this figure stands Pollux, also of first magnitude.

Gemini is one of a group of six prominent constellations which are seen at their best on evenings of mid-winter. Directly below the twins is Canis Minor, the lesser dog, with brilliant Procyon. Still lower, and a little to the right, is the great dog, Canis Major, with Sirius.

Higher and to the right of the great dog is the constellation generally considered the finest in the sky. This is Orion, with two stars of the first magnitude: Betelgeuse, above, and Rigel, below. Between them are three stars in a row that represent the belt of the warrior that this figure is supposed to represent.

Still higher—and still farther right—is Taurus, the bull, with Aldebaran, reddish in color, to represent the animal's eye. And above this group, directly overhead, in fact, stands Auriga, the charioteer. This also contains a star of the first magnitude, called Capella.

Although Mars is the only planet shown on the maps, another is visible earlier in the evening than the times for which they are drawn. Jupiter, of magnitude minus 1.6

and slightly brighter than Sirius, is in Aquarius, the water carrier. It sets in the west about 8:00 p.m. at the beginning of the month and about an hour earlier at the end. But you can easily find it earlier in the evening as it shines so brightly in the southwestern sky. And early in the morning, for about two hours before sunrise, Venus shines, even more brilliantly, in the southeast.

It was because Mars is now the closest it has been for the past two years or will be for the next two that Soviet scientists on Nov. 2 launched their spacecraft, Mars 1, to make closeup pictures of Mars before it has receded too far from earth. The spacecraft will probably pass quite close to the planet, but it has to radio its pictures back to earth, and that means that the planet cannot be too far away.

Actually, for a so-called "close approach," Mars is now quite far away! It came to somewhat more than half this distance in September 1956 and will do so again in August 1971. Then, no doubt, many important observations will be made of Mars—from the earth, from satellite observatories circling the earth, and from spacecraft flying near the planet.

Mars goes around the sun in a year equal to 687 of our days. We go around more

rapidly, and every 780 days (about two years and two months) we go past it. At such a time we are closest to Mars, which is in a direction opposite to that of the sun. Such an event is called an "opposition" of Mars. About halfway between oppositions, earth and Mars are in opposite directions from the sun. As seen from earth, Mars is in "conjunction" with the sun.

The earth's mean distance from the sun is 93,000,000 miles; that of Mars is 141,500,000 miles. If both planetary orbits were exact circles, at any opposition Mars would be 48,500,000 miles away (the difference between the two distances). At conjunction they would be 234,500,000 miles apart (the sum of the distances).

Orbits Elliptical

But both orbits are elliptical, that of Mars even more so than ours. The result is that if we happen to pass Mars at the point where the two orbits are closest, it will be only 34,500,000 miles away. That almost happened in 1956 when the minimum distance was 35,200,000 miles. Then we swung around our orbit far away from Mars, and when we passed it again, in November 1958, the planets were separated by 45,400,000 miles. The next opposition came at the end of 1960, with 56,500,000 miles. And now, in February 1963, even though we swing toward Mars, that planet is 62,280,000 miles away.

The next after this will come in March 1965 and it will be a little better, with the

